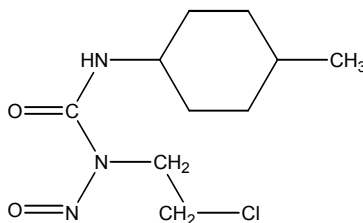


1-(2-CHLOROETHYL)-3-(4-METHYLCYCLOHEXYL)-1-NITROSOUREA (MeCCNU)
CAS No. 13909-09-6

First Listed in the *Sixth Annual Report on Carcinogens*



CARCINOGENICITY

1-(2-chloroethyl)-3-(4-methylcyclohexyl)-1-Nitrosourea (MeCCNU) is *known to be a human carcinogen* based on sufficient evidence of carcinogenicity in humans (IARC S.7, 1987). Adjuvant treatment with the compound has been evaluated in 3,633 patients with gastrointestinal cancer treated in nine randomized trials. Among 2,067 patients treated with the compound, 14 cases of acute nonlymphocytic leukemia occurred, whereas one occurred among 1,566 patients treated with other therapies. Cumulative risk was not affected by concomitant radiotherapy or immunotherapy. A subsequent report described a strong dose-response relationship, giving a relative risk of almost fortyfold among patients who had received the highest dose.

An IARC Working Group reported that there is limited evidence of carcinogenicity in experimental animals (IARC S.7, 1987). Data on MeCCNU were included in a report in which a large number of cancer chemotherapeutic agents were tested for carcinogenicity by repeated intraperitoneal injection in rats and mice (Weisburger, 1977). The compound increased the incidence of tumors in rats and slightly increased the incidence of leukemia and lymphosarcomas in female mice. When administered by intravenous injection, MeCCNU induced lung tumors in rats.

PROPERTIES

MeCCNU is a powder stable in pure form and in solution at slightly acid pH, and readily decomposes in strong acid and alkaline solution (Safety Data Sheet, Division of Safety, National Institutes of Health, 1986). It is very slightly soluble in water, soluble in absolute ethanol, lipids, and nonpolar, organic solvents. Conditions contributing to instability are acid, alkali and elevated temperatures. There is very little information in the literature concerning the chemical and physical properties of MeCCNU. There is much more voluminous information on 1-(2-chloroethyl)-3-cyclohexyl-1-nitrosourea (CCNU), which is chemically and physically similar to MeCCNU. MeCCNU is likely to be inactivated under conditions of fire. Hazardous decomposition products under conditions of fire are likely to include hydrochloric acid and nitrogen oxides. The formation of 2-chloroethanol, acetaldehyde, vinyl chloride, and cyclohexylamine in varying amounts has been reported for the aqueous hydrolysis of CCNU. The same products are probably formed from MeCCNU (except that MeCCNU would give 4-methylcyclohexylamine) and may also be decomposition products on ignition.

USE

MeCCNU has been used to treat malignant melanoma and cancer of the brain, lung, and digestive tract (Boice et al., 1983). MeCCNU is an experimental tumorigen.

PRODUCTION

No production, import, or export figures for MeCCNU are available.

EXPOSURE

The National Occupational Exposure Survey (1983) estimated that 229 total workers, including 82 women, were potentially occupationally exposed to MeCCNU (RTECS, 1990).

REGULATIONS

OSHA regulates MeCCNU as a chemical hazard in laboratories under the Hazard Communication Standard. Regulations are summarized in Volume II, Table A-15.